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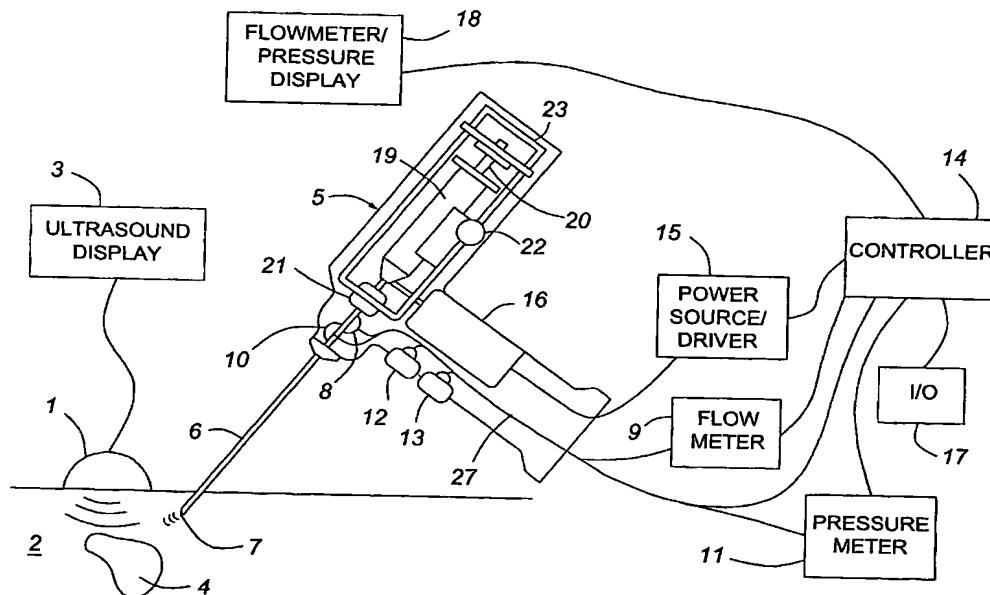
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(54) Title: MEDICAL DEVICES WITH ENHANCED ULTRASONIC VISIBILITY



(57) Abstract: A medical device having enhanced ultrasonic visibility is provided. The device permits localized drug delivery, probe positioning, fluid drainage, biopsy, or ultrasound pulse delivery, through the real-time ultrasound monitoring of the needle tip position within a patient. The device permits controlled dispersion of a drug into solid tissue, the lodging of particles into solid tissue, and drug delivery into specific blood vessels. As a needle is inserted, a fluid that contrasts echogenically with the organ environment is injected into the patient. The fluid travels a brief distance before being slowed and stopped by the patient's tissue and this fluid flow will be detectable by ultrasound. The needle position during insertion will be monitored using ultrasound until it is at the desired point of action. A therapeutic drug is then delivered or a probe inserted

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through the needle to perform therapies such as tumor ablation using RF heating. The fluid flow rate may be adjusted during insertion to maintain a properly defined image of the needle tip. At the point of action, the echogenic fluid can be pulsed, repeatedly and at varying flow rates, until the fluid dispersion pattern is satisfactory and the drug can then be delivered. Ultrasound can also be delivered through the needle using a transducer mounted in the handheld assembly.